Story Matters: Teaching Content and Literacy Across the Curriculum

by

Heidi Mills

Inquiry is grounded in stories. When we want to learn something new, we investigate how others—biologists, climatologists, anthropologists, historians, authors and botanists—go about it. We learn their stories.

Honoring an Inquiry Stance

- It's about teaching readers, writers, mathematicians, scientists and social scientists.
- So it's critical to offer a **balance.** Inquiry into reading, writing and mathematics (teaching children how to be effective and strategic readers, writers and mathematicians) **AND** inquiry into ways to use reading, writing and math as tools for learning in the sciences and social sciences.
- As you plan, think about ways to push literacy and math into science and social studies rather than only thinking about ways to impose science or social studies content in reading, writing or math workshops. Of course you will naturally do so when it makes sense and it's seamless. You just don't want to force it.

Typical daily forecasts across grade levels include curricular structures:

- *Exploration: Settling-in*
- *Morning meeting for building community and curriculum*
- *Reading Workshop: Inquiry into reading process*
- *Writing Workshop: Inquiry into the writing process*
- *Math Workshop: Inquiry into mathematics*
- *Integrated units of study in the sciences and social sciences. Children learn to use reading, writing and mathematics as tools for learning in integrated units of study.*

Planning Mantra

- Think about teaching children the skillfulness of inquiry (how to learn) in concert with teaching content (what to learn).
- When we adopt this stance, learning in school more closely reflects learning in the world.

Structure of Workshops Across the Curriculum

- *Demonstration – mini-lessons to show students how and why*
- *Engagement – living the process*
- *Reflection and Celebration– reflecting as individuals and/or groups on the content, skills, strategies and concepts – celebrating growth and change*

Students need to use primary and secondary sources in concert.

When historians, anthropologists, biologists, astronomers, and entomologists conduct focused inquiries, they do not settle for information found only in secondary sources. They consult secondary sources but do so to help them interpret data in and explore questions raised by their primary source investigations.

Grounding writing in primary source experiences

The World Is Our Classroom
10/1/10

Dear Parents,

This week we have really gotten into animal observations and expert projects. The very important first step was to select an animal and then to observe it, to learn as much as possible about the animal through direct observation, sketching and note-taking. We learned about our animal's bodies and their behaviors. These observations, learning from the animal itself, is called *primary source information*. Then, the children generated questions about their animal. These questions should, in part, guide their research. Thursday when we went to computer lab the children did some research about their animals. Everyone left the lab holding some pages printed out from good internet resources. These *secondary resources* will add to the information they already have through their own observations.

I have demonstrated some procedures for gathering information through primary and secondary resources. We observed night crawlers on two afternoons, sketching and writing detailed notes about their structure as well as their behaviors. I took some of my observations and shared them with the children. In my short-hand notes I wrote, *bendy, twisty, can move one part of its body at a time, expand/contract, goes easily in both directions*. From there I wrote some of these notes into an expanded explanation. *I noticed, from my observations that worms are very flexible. They can bend and twist in almost any direction! This tells me that worms do not have backbones.*

Here is how I teach note taking: 1) First read the material. Someone can definitely help you read it if it is too challenging for you to read alone. 2) Then turn away from the words and pictures and think about what is the most important or most interesting information you want to remember and share. 3) Then write it down *your own way, in your own words*. When I asked the children why they thought it was important to write it "your way," Samantha said, "So that way you can really learn it!" I couldn't have said it better. In short, I am coaching the children to ***Read**, **Think**, and **Write it Your Way***. Thursday afternoon many of the children got a good start on this process and we will take more notes from our secondary resources today. For next week, we will spend some time each day writing notes. Try to be sure that the children have materials here to work with each day. Next week I'll let you know what is expected from the expert projects and when everything is due. For now.... note-taking.

Along with the project presentation (about 5-10 minutes) I am asking that the children write a 2 page paper. I am hoping that most of the rough draft will be done in the classroom. What the children write shouldn't sound like the adult author of a book or a scientist who studies their animal.

It should sound like a second grader. It should sound like them! Their wonders, observations and learning should come through. They shouldn't try to make their paper and presentation be like the authors they read. I remember doing my first papers and presentations. I tried to impress my teachers and classmates by throwing in big words I didn't really understand. As Samantha said, this process is important. "So that way you can really learn it!" The children's learning should shine through.

All throughout this process, we have been observing animals and recording notes about their structures and behaviors. At the zoo, we observed penguins. In the classroom we watched videos of penguins. We watched videos of manatees and recorded notes. Then we read a great little book about them and thought about what we learned through our own observations as well as the book. In the science area we have had many visitors including tree frog tadpoles, green anole lizards, grasshoppers, crickets, a big toad and many black swallowtail caterpillars.

Some of the caterpillars came with parsley plants from Woodley's Nursery. Others came from the fennel plants right outside our own classroom window. These have been fascinating to watch. We have observed some from eggs. The tiny larvae are not much larger than this dash (-). But we have been able to watch them eat and eat and grow and grow until they are as big as a child's little finger before they climb up to the top of their enclosure, hang upside down, attach themselves and molt their skin one final time to reveal the amazing chrysalis beneath.

I have seen this many times and I am always a little breathless at the sight. But the dessert is when we come in one morning and find a swallowtail emerged from its pupa, jet black and velvety, gently pumping its wings back and forth waiting to fly free – and to start the cycle all over again. It is one thing to read about complete metamorphosis from a book, another to watch it on a video. But going outside in the morning to get new fennel, transferring the caterpillars to the fresh green plants, putting down new paper towels in the bottom of the butterfly netting, photographing the growing caterpillars, spotting their shed skins, seeing the two silk strands the larvae use to attach themselves before their final molt, examining the chrysalises at the top of the net, setting the young adult butterflies free… *living with metamorphosis*… that is another level entirely. That is living science. Have a great weekend! Tim

Embedded Inquiries: An Overview

- Learning to observe and interpret primary source experiences during science workshop by accessing animal kids can observe first-hand.
- Genuine inquiry into the natural world… Scaffold children into the skillfulness of inquiry.
- Learning to read and write content literacy through a unit of study around *Ranger Rick* articles.
- Unite content and literacy learning through *Ranger Rickish* articles and expert project presentations.

Ranger Rick Articles as Mentor Texts

- Tim launched writing workshop every day by reading a *Ranger Rick* article projected on the document camera.
- As he read, they noticed and named the text features, craft moves and text structures that made the articles so compelling.
- After they generated a solid list of nonfiction text features, they began composing "Ranger Rickish" pieces based on careful primary source observations they had been making on an animal they had been carefully tracking.

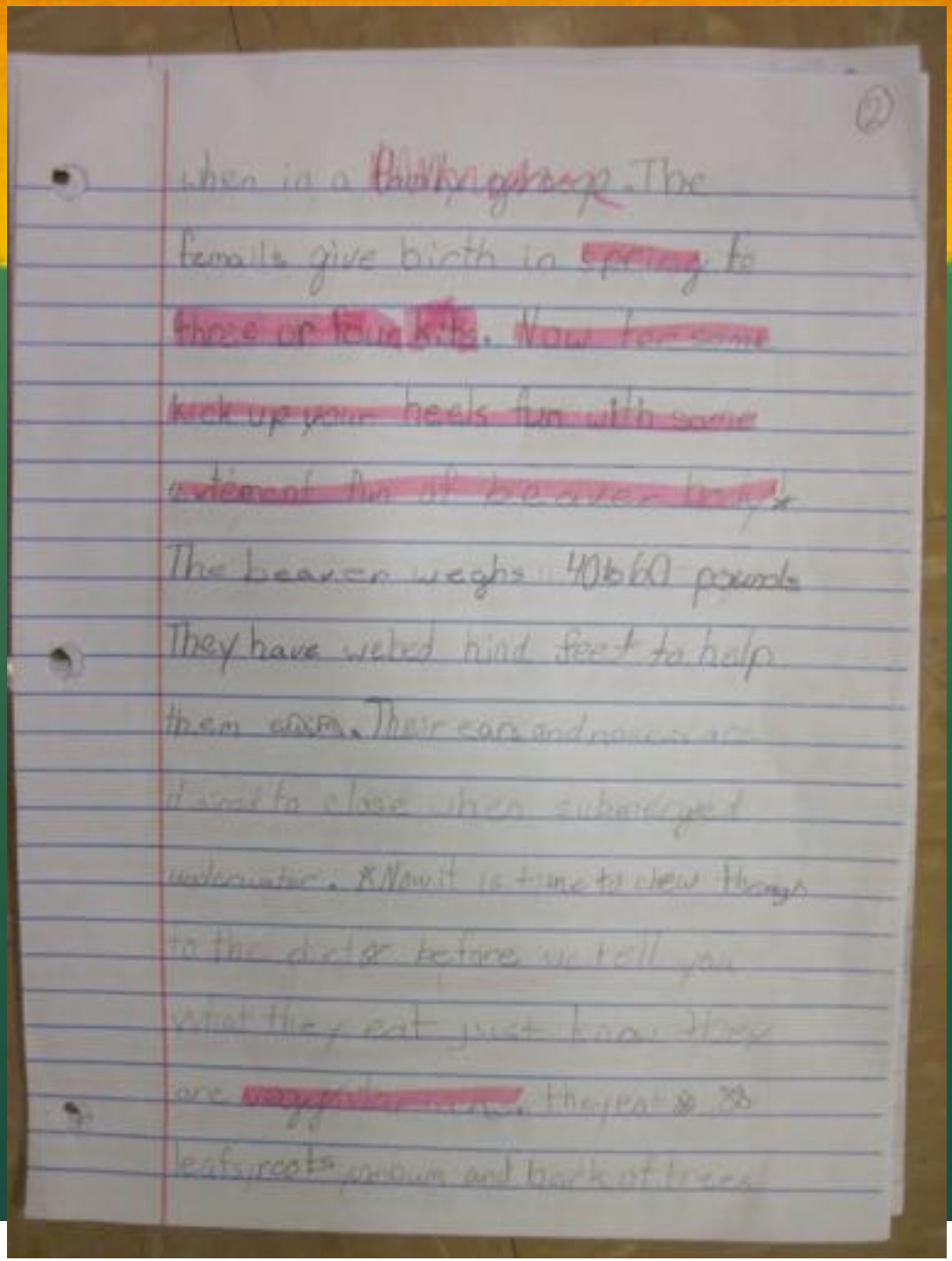
Non-Fiction Text Features in "Ranger Rickish" Writing

- *Pictures have captions
- *Strong creative introductions – even for each header (questions, dares, amazing information up front)
- *Headers let you know what is coming up – as well as a tool for organizing ideas
- *Creative titles/Mid-Titles
- *The writer makes you *care about the animal*
- *The pictures really go with the words
- *Paragraphs are used to organize smaller chunks of information
- *Fun invitations to read on (Let's pounce to the next page)

- *Information is presented in a logical order or sequence
- *Descriptive, clear language and interesting word choice
- *Some of the stories are written from a first person ("first animal") point of view
- *Question/Answer format is used effectively
- *Begins with a question
- *Quotation marks are used around things they "think" are true.
- *Math is used to make things easy to understand.
- *Bold letters and different fonts are used for emphasis

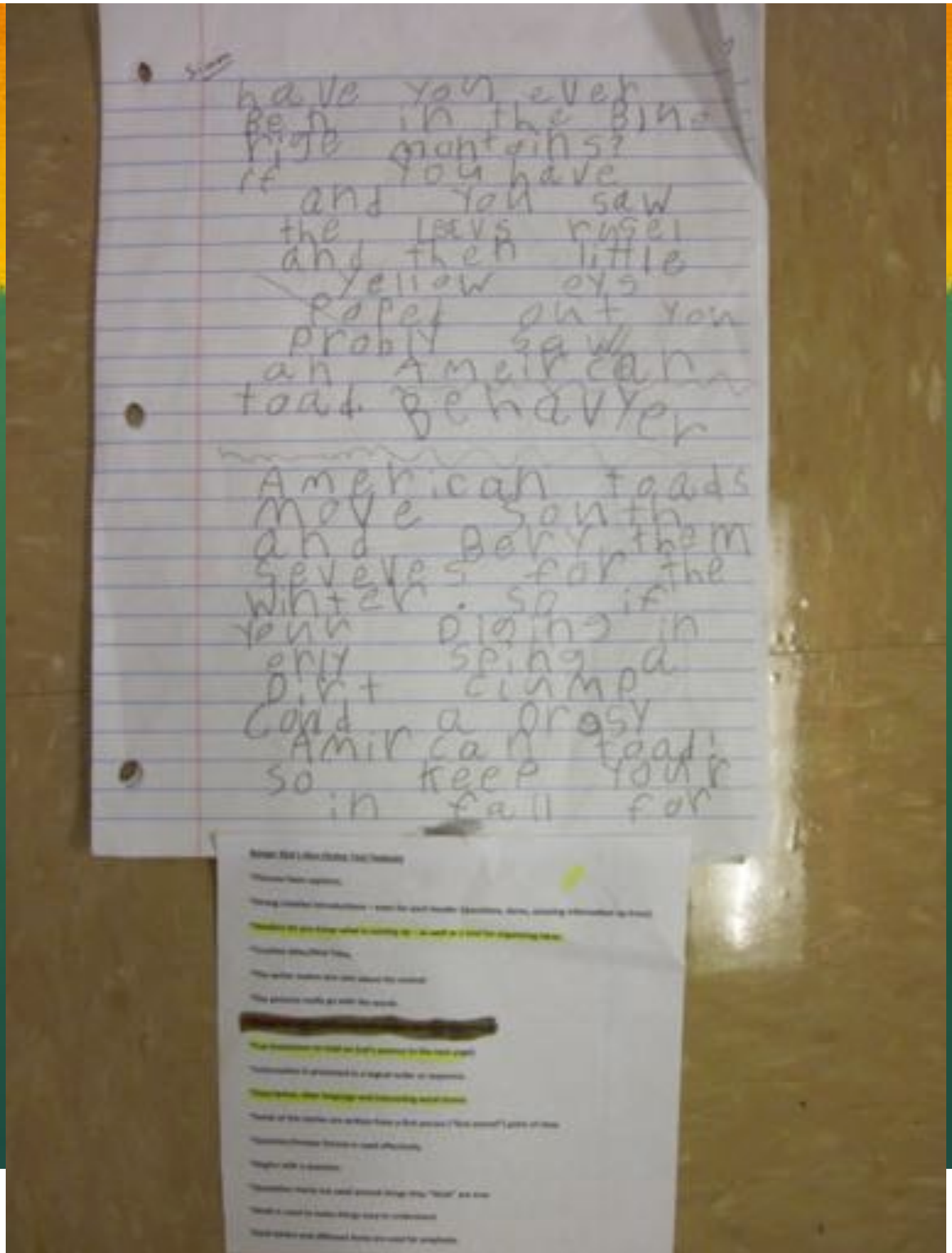
Beaver's by Alana

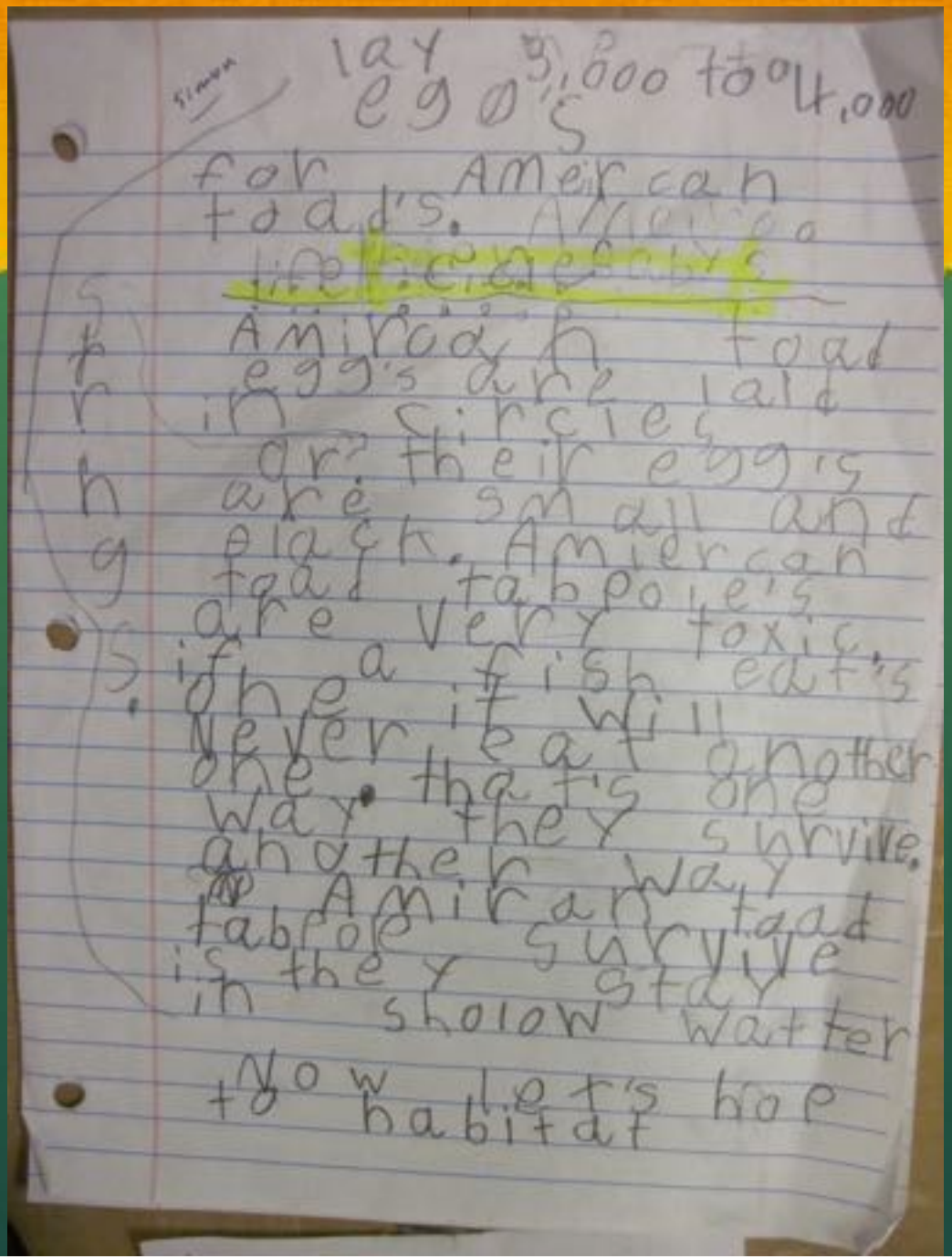
Hey do you live by a lake or pond If y around do you see a pi almost floating on wate you do dive in look an do you see a trail leading go in see what you can see what this is. It is a Beave



2

when in a [illegible]. The
female give birth in [illegible] to
three or four kits. Now for some
kick up your heels fun with some
element fun of the beaver [illegible]
The beaver weighs 40 to 60 pounds
They have webed hind feet to help
them swim. Their ears and nose
close when submerged
underwater. Now it is time to show them
to the doctor before we tell you
what they eat just know they
are [illegible] they eat 88
leafy roots, grain and bark of trees


have you ever
been in the Blue
Ridge mountains?
If you have
and you saw
the leavs rustel
and then little
yellow eys
Popet out you
probly saw
an American
toad. Behavior
American toads
move South
and Bery them
seveves for the
Winter. so if
you doing in
erly spring a
Dirt clump
Coud a orgsy
American toad
so keep your
in fall for



lay 3,000 to 4,000 eggs for American toad's. American toad's life cycle's American toad eggs are laid in circles or their eggs are small and black. American toad tabpole's are very toxic. if a fish eat's one it will never eat another one. that's one way they survive. another way American toad tabpole survive is they stay in sholow watter now let's hop to habitat

In the midst and after the fact reflections during writing workshop

- View video clips of kids composing their animal pieces using inspiration from studying authors who publish in *Ranger Rick* magazines.
- What do you notice, appreciate or wonder about their process in the midst and their reflections on the moves they made as they were learning to write high quality nonfiction?

In the meantime, during science workshop the kids were learning…

- How to make and interpret careful observations.
- How to identify patterns in data.
- How to pose questions from their observations.
- How to read to learn with particular questions in mind.
- How to unite primary and secondary source information and present findings in an interesting, accurate and compelling way through expert project presentations.

From primary source observations to expert project presentations

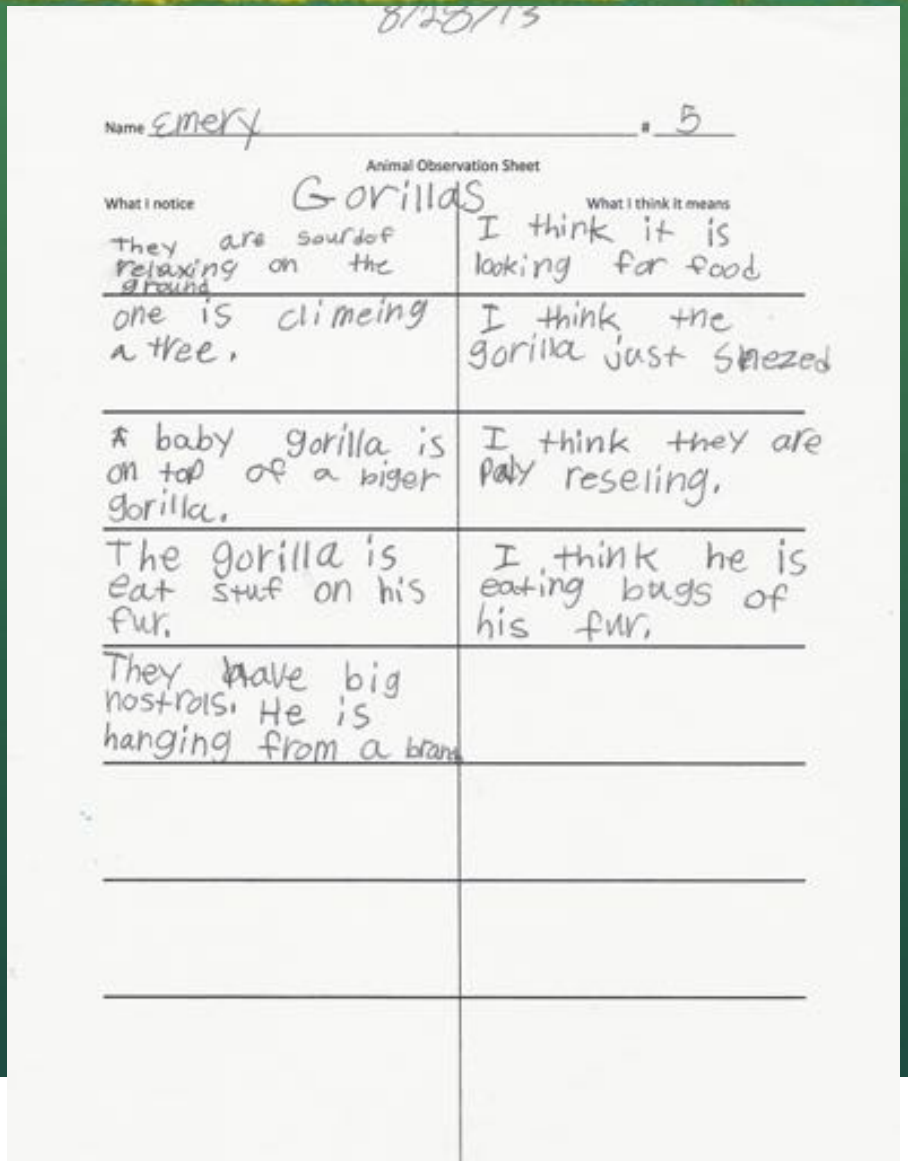
Scaffolding: Begin with whole class experiences to help students learn how to make careful observations and interpret them.

Invite students to pose questions from primary source observations.

Read to investigate questions.

Learn to take notes by taking notes.

Whole class webcam observations



8/28/13

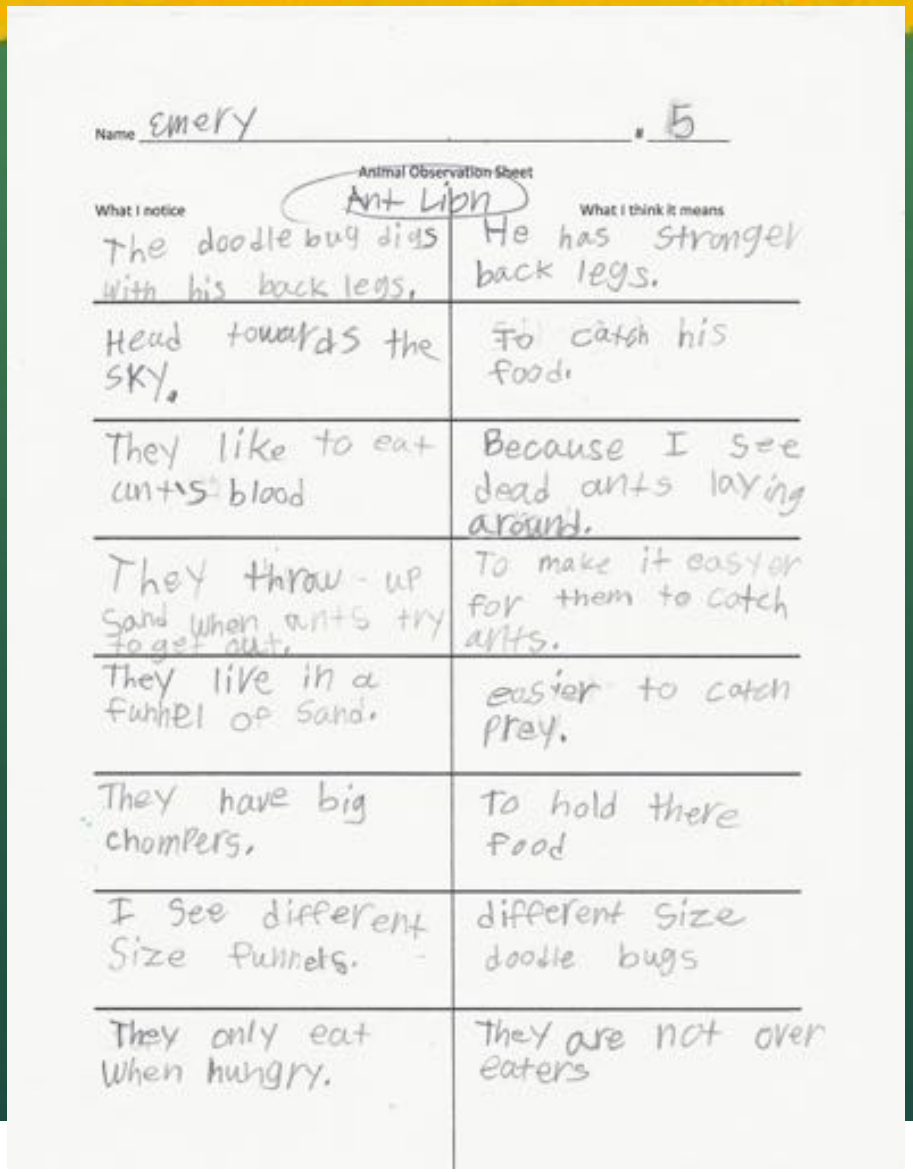
Name Emery # 5

Animal Observation Sheet

Gorillas

What I notice	What I think it means
They are sourdof relaxing on the ground	I think it is looking for food
one is climeing a tree.	I think the gorilla just sneezed
A baby gorilla is on top of a biger gorilla.	I think they are paly reseling.
The gorilla is eat stuf on his fur.	I think he is eating bugs of his fur.
They have big nostrals. He is hanging from a bran	

Personal animal observations



Name Emery . 5

Animal Observation Sheet

Ant Lion

What I notice	What I think it means
The doodle bug digs with his back legs.	He has stronger back legs.
Head towards the sky.	To catch his food.
They like to eat ants blood	Because I see dead ants laying around.
They throw up sand when ants try to get out.	To make it easyer for them to catch ants.
They live in a funnel of sand.	easier to catch prey.
They have big chompers.	To hold there food
I see different size funnels.	different size doodle bugs
They only eat when hungry.	They are not over eaters

9/3/13

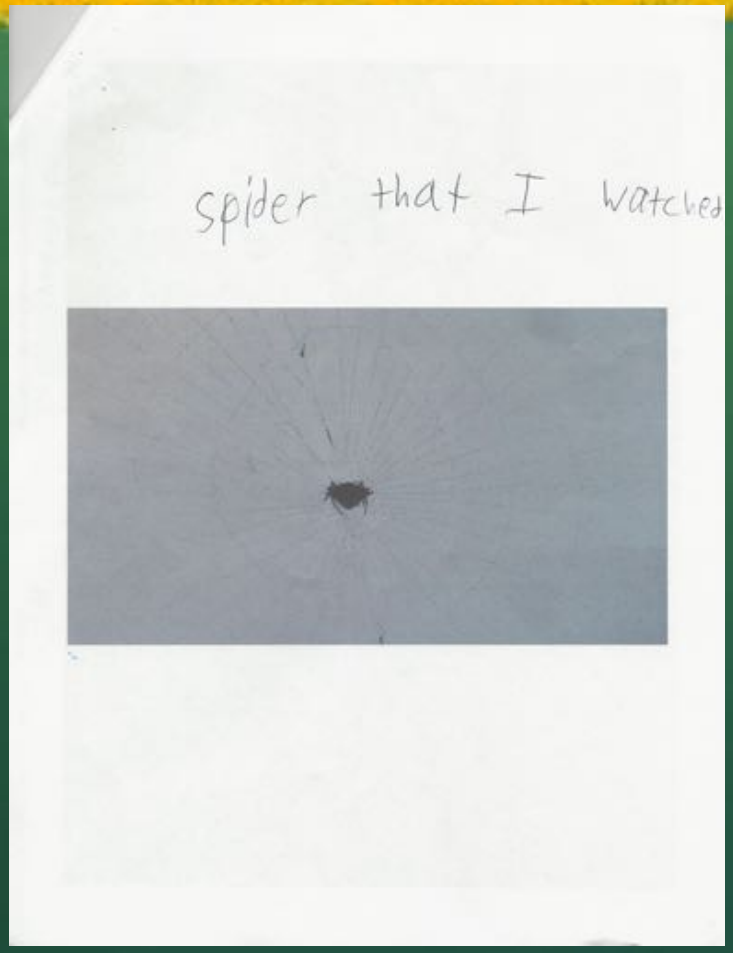
Name Emery #5

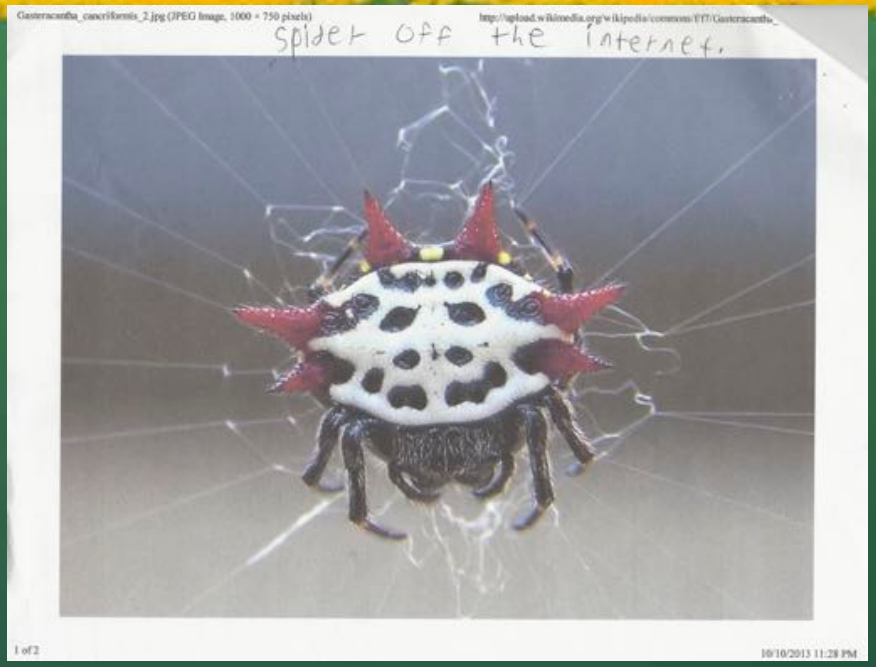
Double Entry Observation Sheet

What I notice	What I think it means
	To feel saurondings To protect it.
It moves slowley.	Is it hurt?
On the botem it is all flat.	It might be eaey to move around.

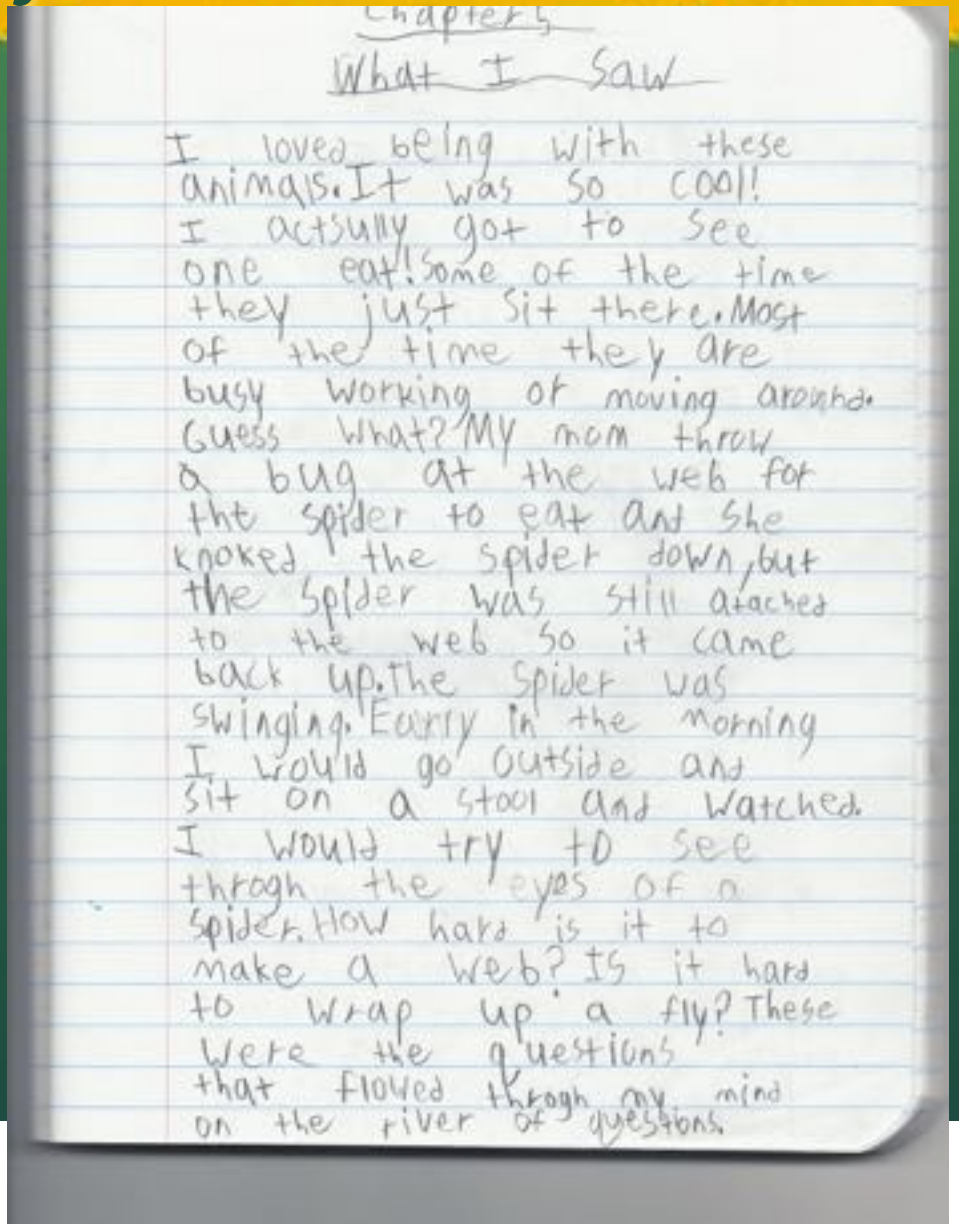
spider that I Wached

Citing primary and secondary sources





Narrative descriptions from primary source observations

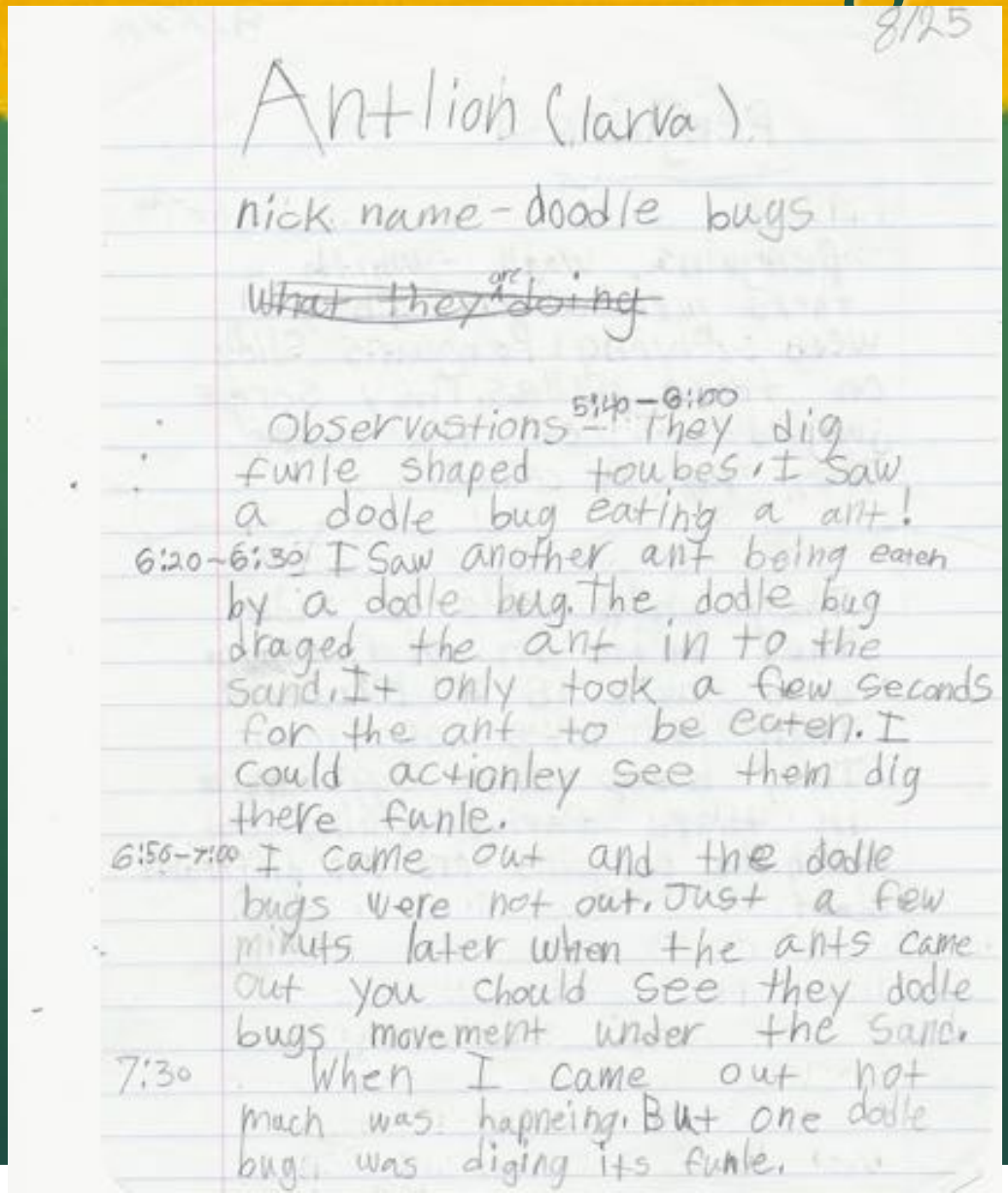


Chapter 5

What I Saw

I loved being with these animals. It was so cool! I actsully got to see one eat! Some of the time they just sit there. Most of the time they are busy working or moving around. Guess what? My mom threw a bug at the web for the spider to eat and she knoked the spider down, but the spider was still atached to the web so it came back up. The spider was swinging. Eurry in the morning I would go outside and sit on a stool and watched. I would try to see throgh the eyes of a spider. How hard is it to make a web? Is it hard to wrap up a fly? These were the questions that flowed throgh my mind on the river of questions.

Careful noticings



8/25

Antlion (larva)

nick name - doodle bugs

~~What they are doing~~

Observvations - 5:40 - 6:00 They dig funle shaped toubes, I saw a dodle bug eating a ant!

6:20 - 6:30 I saw another ant being eaten by a dodle bug. The dodle bug draged the ant in to the sand. It only took a few seconds for the ant to be eaten. I could actionley see them dig there funle.

6:50 - 7:00 I came out and the dodle bugs were not out. Just a few mikuts later when the ants came out you chould see they dodle bugs movement under the sand.

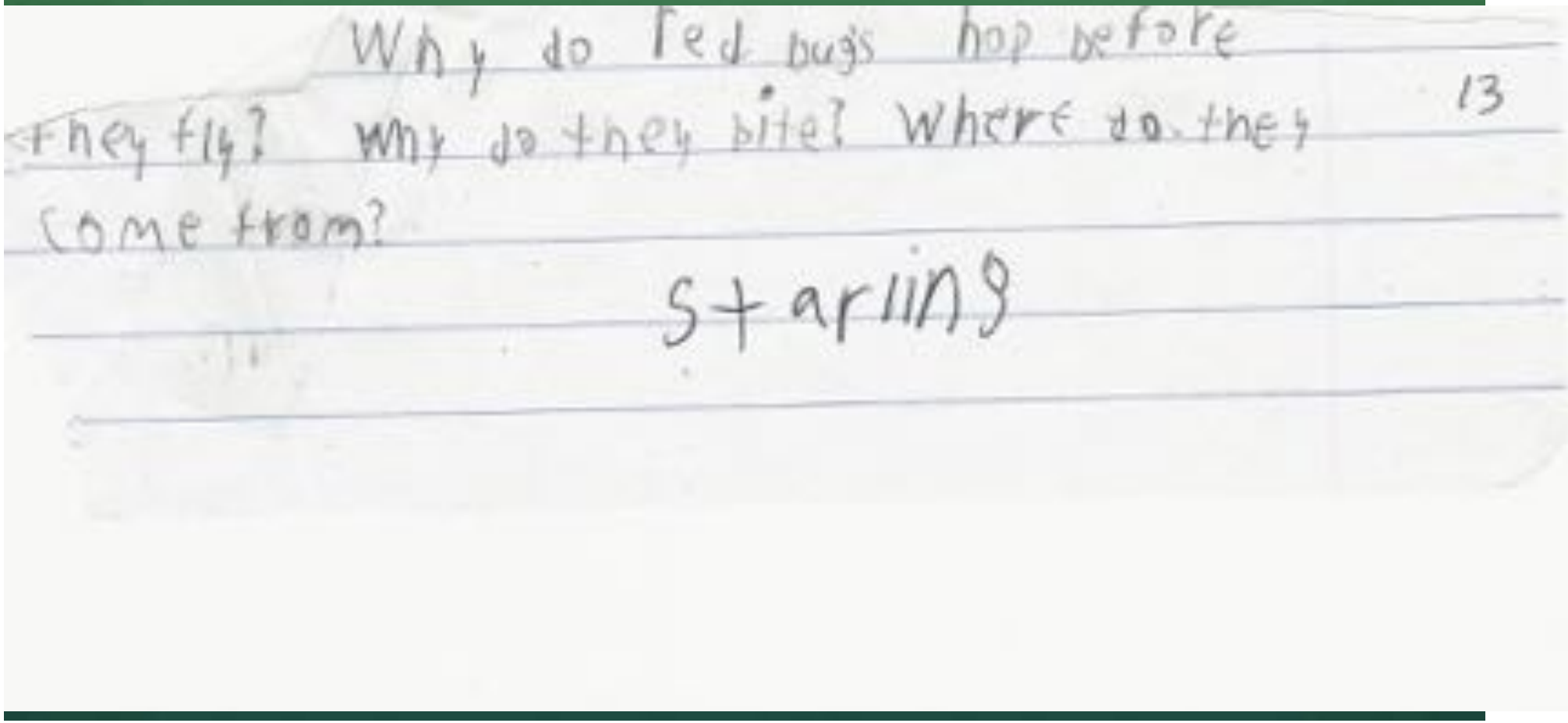
7:30 When I came out not much was hapneing. But one dodle bug was diging its funle.

An ant was being sucked down into the sand. The doodle bug one of couser they allways win. The I saw another ant fall in to a funle. The doodle bug ate the ant.

doodle bug chompers

In one of the holes a sooh as the ant fell in the doodle bug ate the ant.

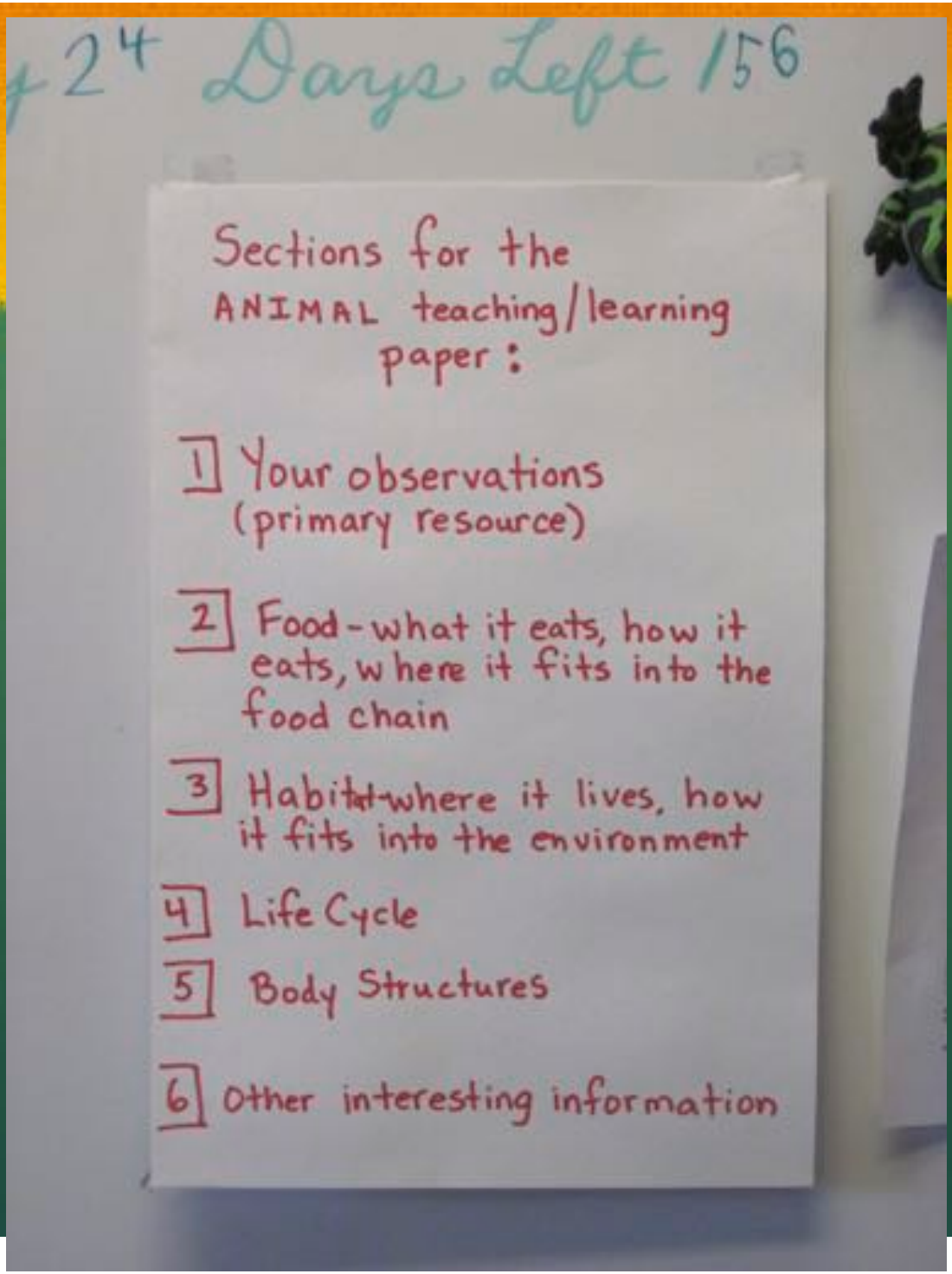
From observations to new wonderings



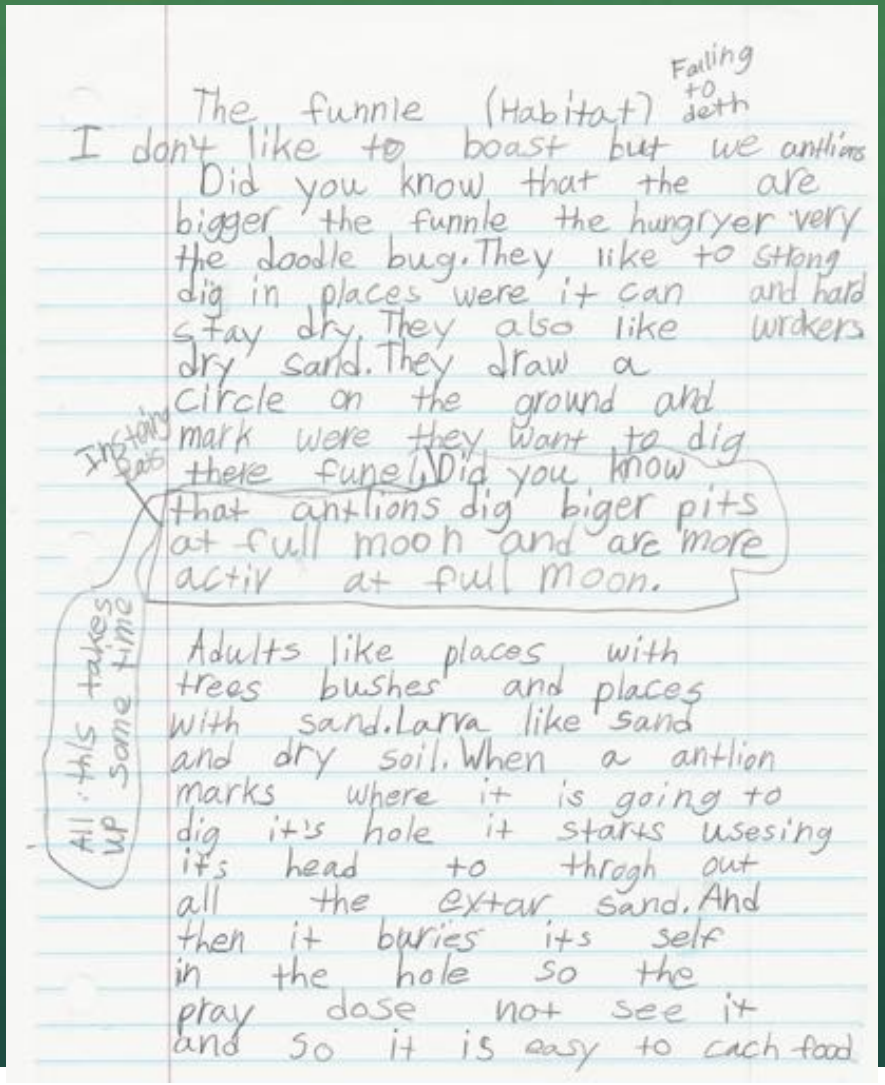
Emery 8/27 #5

Animal Questions — Anthion

1. Why do they just drink the blood of their prey?
2. How do they form their funnel?
3. How long are they in the larva stage?


24 Days Left 156
Sections for the
ANIMAL teaching/learning
paper:
1 Your observations
(primary resource)
2 Food - what it eats, how it
eats, where it fits into the
food chain
3 Habitat - where it lives, how
it fits into the environment
4 Life Cycle
5 Body Structures
6 Other interesting information

Weaving insights from reading animal magazines into well-crafted nonfiction



The funnle (Habitat) Falling to deth

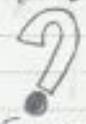
I don't like to boast but we antlions
Did you know that the are
bigger the funnle the hungryer very
the doodle bug. They like to stong
dig in places were it can and hard
stay dry. They also like wrokers
dry sand. They draw a
circle on the ground and
mark were they want to dig
there fune. Did you know
that antlions dig biger pits
at full moon and are more
activ at ful moon.

All this takes some time

Adults like places with
trees bushes and places
with sand. Larva like sand
and dry soil. When a antlion
marks where it is going to
dig it's hole it starts usesing
it's head to thrugh out
all the extar sand. And
then it buries its self
in the hole so the
pray dose not see it
and so it is easy to cach food

ants. They also eat other small insects. If the ant is about to get away the antlion starts to thraw up dirt at the ant. The dirt makes the ant drop back down into the funnel. Then we grab the ant and the ant disappears under the sand. Next up, fun things about mating and laying eggs

* Who's Your Daddy?



On a Summer day, the female hangs on to a twig and waits. For what you ask? A mate. A male will pass by and if she's lucky the male will cling to her tail to let her know that he is - her mate! Us antlions would prefer to lay our eggs in places that stay dry. We lay our eggs in dry sand. When we are done we return back to a tree and hope to find another mate. Interesting fact: When we are held captive we can lay up to 20 eggs. Now lets go through time and see the life cycle of an antlion.

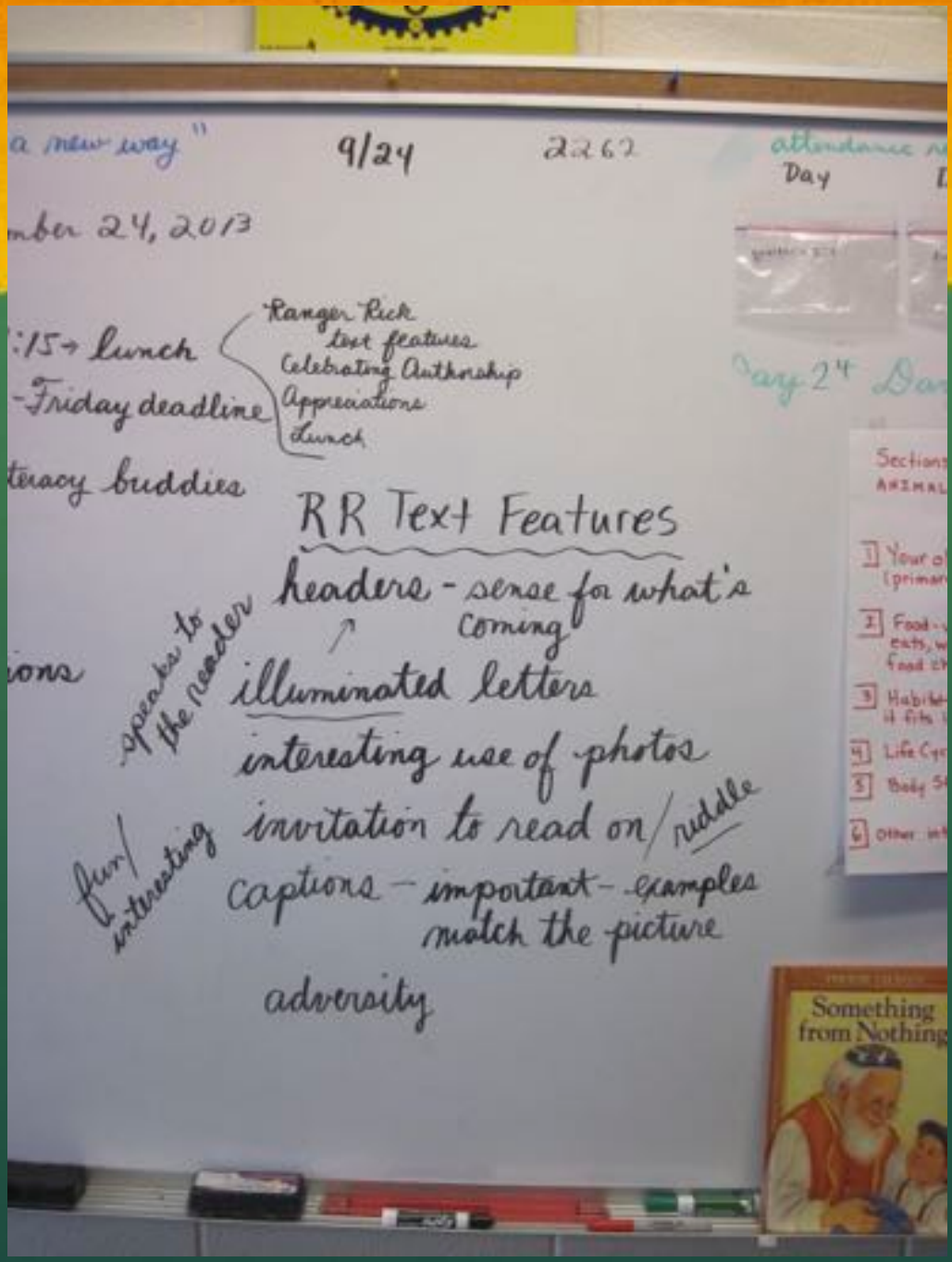
The Inatrsting fots
their eggs look like spit.
The come out in the spring
So you will see them a lot
then. the jump be for they
fly! their eggs, plants chewees
thare cool!

the end. no no no no. no No
ooooo!

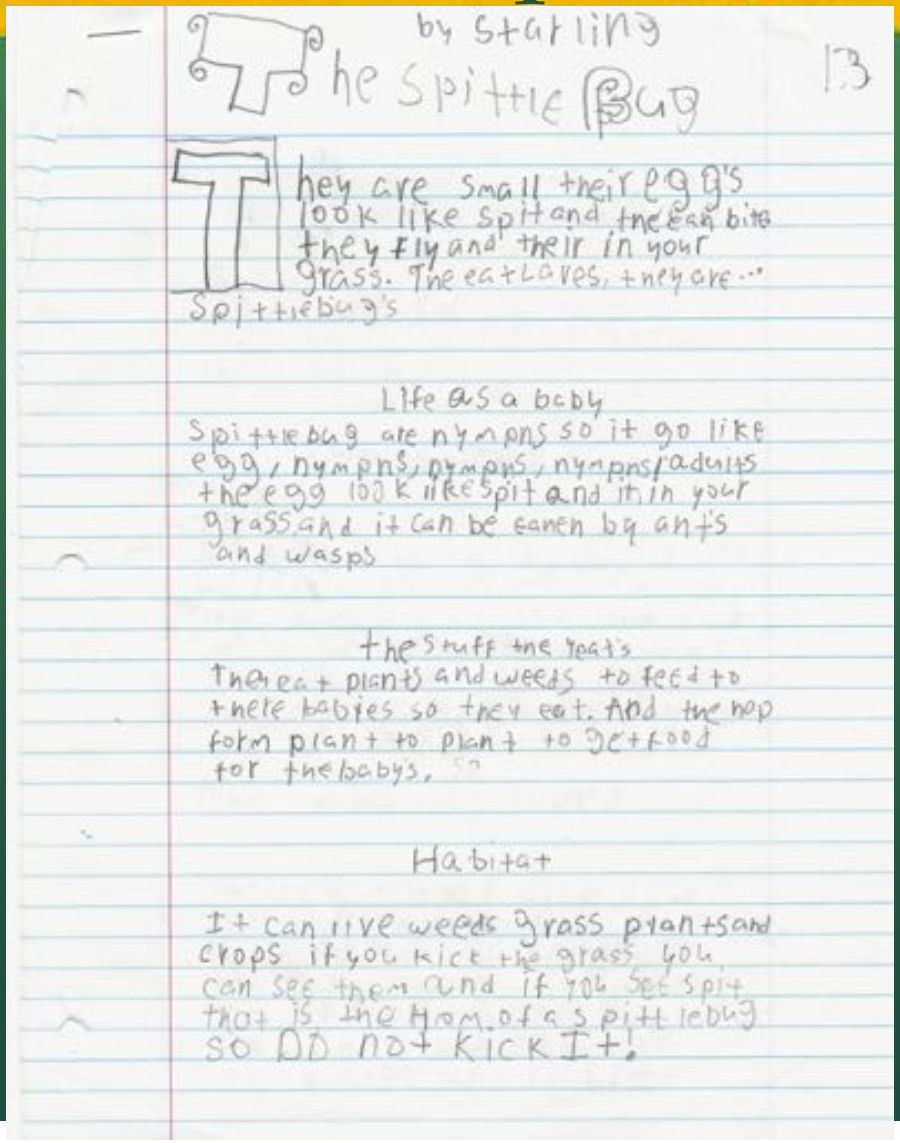
Jesse 10/11 14

Introduction

I was walking in the dark. Then... What is happening? I am caught in a sticky strong trap made of silk. Then I saw the creature that made the trap. A tiny spiky animal stood on the net that I been traped in. What is it? It's a spiny orbweaver. I dare you to read more of this artical but I have to warn you. First they can bite but it is not harmful to humans. Also, if the spines are touched in the wrong place they can puncture skin. I hope you know I did alot of research so this might be long. It is ok to read on now


a new way"
9/24
2262
Day
mber 24, 2013
:15 → lunch
- Friday deadline
Ranger Rick
text features
Celebrating Authorship
Appreciations
Lunch
teracy buddies
RR Text Features
headers - sense for what's coming
illuminated letters
interesting use of photos
invitation to read on/ riddle
captions - important - examples match the picture
adversity
speaks to the reader
fun/ interesting
Something from Nothing

From content & editing conferences to publication



by Starling

The Spittle Bug

13

They are small their egg's look like spit and the eat bite they fly and their in your grass. The eat Leaves, they are... Spittlebug's

Life as a body

Spittlebug are nymphs so it go like egg, nymphs, nymphs, nymphs, adults the egg look like spit and it in your grass and it can be eaten by ants and wasps

the stuff the eats

The eat plants and weeds to feed to there babies so they eat. And the hop form plant to plant to get food for the babys.

Habitat

It can live weeds grass plants and crops if you kick the grass you can see them and if you see spit that is the Home of a spittlebug so DO not KICK It!

Body Structures

A spittle bug's leg's are for jumping the use there wings for flying in the air the use the it mouth for biting

Where do I Saw

he fly a litte in the air and chews on my mom's car the come out at day the egg look like spit. One bit me and the like to fly a lot in marchand april in the daylight the eat plants and weeds.

The Interesting fact

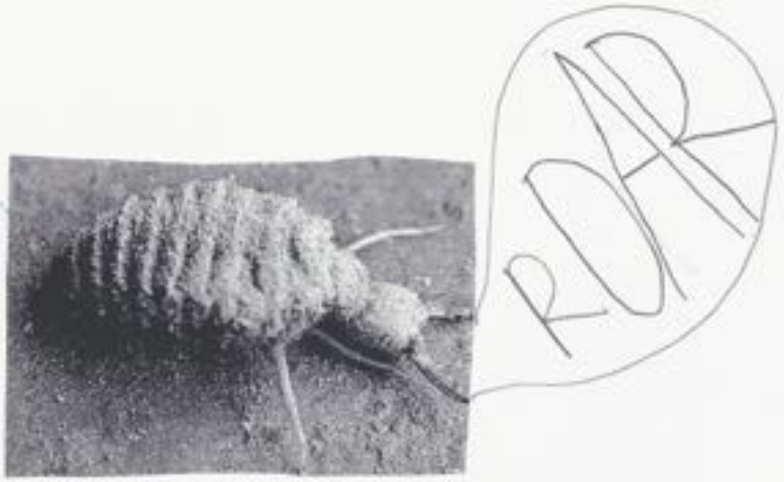
Theiregs look like spit. the egg come out in the spring Spring so you will see them a lot then the jump befor the fly the eat plants and weed and cool the egg are on plants and it bites

Ha Ha I'm funny are we back on
OH when spittlebug babyies
the ake nymphs.

It time to say bye

It time to say bye NO NO OOO
i do not want to go we well it
to go bye

The Antlion Hear Me Roar!



by Emery

The Antlion Hear Me Roar!

Hi my name is Emery Bryant Christensen. I will be telling you about some different creatures in the world. Can you guess what they are... they are animals smaler but they really are... animals that have chompers but what they really are.... Okay so I guess you are getting tired of wanting to now what they really are and they are /A-N-t-l-i-o-n-s spells antlions! That is what we are going to be learning about right about ★★★★ Wow!

★ Funnel of Food

Time to listen up as we dig a little deeper into a funnel, the habitat of the antlion. I don't like to boast but we antlions are very hard workers. First, I will tell you how we make our funnel. We like to start in a nice dry, sandy spot. Then we use our heads (literally) and dig out all the extra sand. We bury ourselves bottom first and hide so our prey does not see us. That makes it easy for us to catch food. Did you know the bigger the funnel, the more

hungry the antlion?

That's mostly all about our habitat, the funnel. Haven't got enough yet? Keep on reading to learn more. Next up, the body of an antlion.

* Head, shoulders, knees, and toes... Well, Not Really!

No, no, no! No chomping! Oh, hi! We're back! An antlion has some sharp chompers on the front of its head. Now back to the antlions point of view. We all have large, sharp fangs. They help to suck the blood of our prey. Our nick name should be "Vampire bug"! We have three body parts: Head, thorax, and abdomen. They also have six legs. When we transform

from a larva into an adult we grow two pairs of wings that are attached to the thorax. We have super small anennaes all along our fangs, almost like small bristles. They are used to detect prey and predators.

Antlions are built for what they do. The larva has a hard shell for digging into the ground. Now for a final fact: the adults have strong wings for flying and eyes that wrap around their head so they can see in all directions. So thats all to learn about our body. Next up ... our food! It may not sound very exciting but I think you'll change your mind.

* Whats On The Menu Today?

So you want to know how we got our name? Well it is obvious! You are called what you eat and we eat ants.

If an ant falls into our funnel we come out and Chomp! We then suck their blood. Cool huh? Adults eat small flies and water. Adults also drink nector from other flowers. Larva do not just eat

ants. They also eat other small insects. If the ant is about to get away the antlion starts to throw up dirt at the ant. The dirt makes the ant drop back down into the funnel. Then we grab the ant and the ant disappears under the sand. Next up, fun things about mating and laying eggs

* Who's Your Daddy?

On a summer day, the female hangs on to a twig and waits. For what you ask? A mate. A male will pass by and if she's lucky the male will cling to her tail to let her know that he is - her mate! Us antlions would prefer to lay our eggs in places that stay dry. We lay our eggs in dry sand. When we are done we return back to a tree and hope to find another mate. Interesting fact: When we are held captive we can lay up to 20 eggs. Now lets go through time and see the life cycle of an antlion.

* My So Called Life

When the antlion is ready to become a cocoon it digs a little deeper into the funnel. Its cocoon is made of silk and thread. It is the shape of a sphere. Some of the antlions waste is used to produce the silk for the cocoon. The cocoon is hollow. When it comes out it is not able to fly yet so it climbs to the nearest tree or plant to let its wings harden. It takes up to 20 mins. for its wings to harden. Fact: The antlions cocoon does not move because of all the sand that holds it in place.

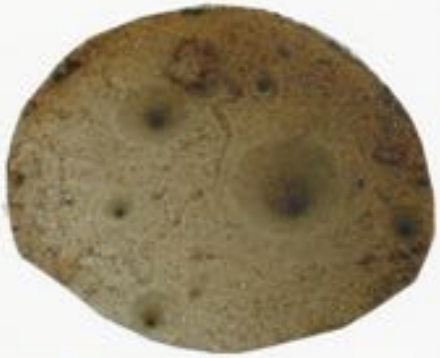
* WHAT I CAN SEE

It digs circular shaped funnels. The antlion only sucks the ants blood and then discards the ants body. Antlions can be big or small. As soon as the ant falls in, it normaly disappears. When it is hungry it will eat fast but if it is not hungry it will eat slow or it

won't eat at all. And thats all to know about an antlion.

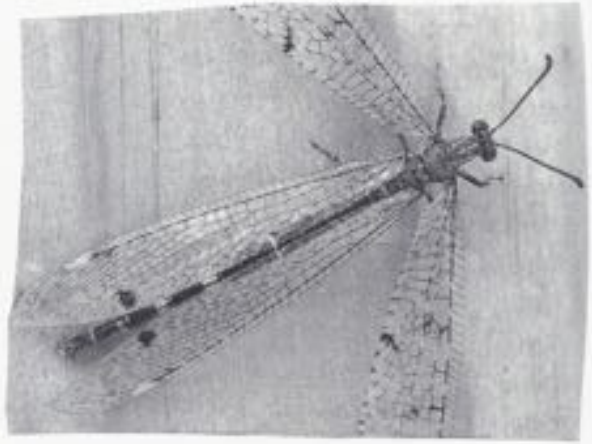
Thanks for reading!

Home sweet Home!



Lunch is Served!

All grown up!



Expert Project Presentations

- As a culminating experience they moved from well-crafted Ranger Rickish articles to expert project presentations.
- Expert projects – showing and telling – speaking from the heart.
- Video demonstrations:-)

Inquiry into Native Americans

- The power of primary source stories in the social sciences
- The relationship between beliefs, practices and guiding questions in inquiry-based units of study

Beliefs that underpinned Tameka's inquiry into Native Americans:

- *Children are not born into the world with a certain perception of Native Americans. What they learn directly or indirectly shapes their perceptions of this group of Americans.*
- *By openly addressing the nature of stereotypes as well as those specific to Native American, students will be able to take a more critical stance when addressing social justice issues that many cultural groups face.*

- *Native Americans have a rich culture that continues to impact the lives of all Americans.*
- *Native Americans are not people of the past.*
- *To understand Native Americans we must look into their interaction with and dependence on the environment and organisms in the environment, a strong thread across Native American cultures.*

Questions that underpinned Tameka's inquiry:

- *Which perspectives might offer potential insights or strategies for this inquiry?*
- *How might we understand key relationships – Native American interactions with other cultural groups? How are these relationships depicted in different mediums (books, photos, art, film, etc.)?*

- *How have our understandings of Native Americans changed over time/become more authentic? Where did this knowledge come from?*
- *Who is heard? Who has power/power structures?*
- *How has what I have learned about Native Americans and other cultures in general changed me?*

Living into these beliefs and questions through primary source stories.

- Video demonstration: Small group conversation around stories told by rather than about different cultural groups.
- What do you notice, appreciate or wonder?

Teaching as Inquiry

- When we adopt an inquiry stance as teachers, we envision *new beliefs* that are often ahead of our practices.
- If we are growing, changing, inquiring, we are intentionally *working to live into new beliefs*.
- It is my hope and dream that these classroom demonstrations will inspire you to embrace and implement some new beliefs and practices.

Teaching with Intention

I believe… ***So I will…***

Uncovering Wisconsin Standards

- Teachers know the subjects they are teaching. The teacher understands the central concepts, tools of inquiry, and structures of the disciplines she or he teaches and can create learning experiences that make these aspects of subject matter meaningful for pupils.
- Teachers know how children grow. The teacher understands how children with broad ranges of ability learn and provides instruction that supports their intellectual, social, and personal development.

Uncovering Wisconsin Standards

- Teachers understand that children learn differently. The teacher understands how pupils differ in their approaches to learning and the barriers that impede learning and can adapt instruction to meet the diverse needs of pupils, including those with disabilities and exceptionalities.
- Teachers know how to teach. The teacher understands and uses a variety of instructional strategies, including the use of technology, to encourage children's development of critical thinking, problem solving, and performance skills.

Uncovering Wisconsin Standards

- Teachers know how to manage a classroom. The teacher uses an understanding of individual and group motivation and behavior to create a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation.
- Teachers communicate well. The teacher uses effective verbal and nonverbal communication techniques as well as instructional media and technology to foster active inquiry, collaboration, and supportive interaction in the classroom.

Uncovering Wisconsin Standards

- Teachers are able to plan different kinds of lessons. The teacher organizes and plans systematic instruction based upon knowledge of subject matter, pupils, the community, and curriculum goals.

THESE STANDARDS POINT TO TEACHING THROUGH GENUINE INQUIRY. THE FOLLOWING SONG COMPOSED BY TIM AND HIS STUDENTS SHOWS WHAT IS POSSIBLE WHEN STANDARDS LIKE THESE ARE IMPLEMENTED WITH INTEGRITY.

MAY IT INSPIRE YOU TO STRIVE FOR WHAT IS POSSIBLE WITH YOUR STUDENTS AND COLLEAGUES!

Challenging status quo…

Striving for what is possible rather than settling for what is typical.

Final video demonstration:

What questions did you ask today?